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Form 1220–5
(January 1974)

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

TECHNICAL NOTE

U.S. DEPARTMENT OF THE INTERIOR – BUREAU OF LAND MANAGEMENT

Estimating and Issuing Fence Material

by

Roger R. Brubaker
Miles City District Office

A suggestion made by Roger R. Brubaker in estimating and issuing fence material has been approved for optional use by Bureau offices.

Present Practice: During recent years the State Offices and Service Centers have requested increasing attention and accuracy be given to making cost estimates and estimates of units of pay items to be included in construction contracts. Although in fence contracts the major emphasis has been on estimates of units to be constructed for bid schedules and on cost per unit, so it stands to reason that estimates of materials should also be improved.

At the present time there is no Bureau-wide established method of estimating and issuing fence material. There are probably several different methods being utilized by the various districts but few of these are keyed to standard BLM specifications and drawings and the Job Documentation Report (JDR) system. They are based primarily on the use of average figures and have often resulted in contractors running short on the job or having to return large quantities of stores.

Proposed Changes:

1. Standardize a method of estimating fence material for specific jobs and for purchasing fence material annually.

2. Key all material estimates to standard BLM fence specifications and drawings.

3. Key materials estimates directly to JDR for each job instead of using average figures.

4. Standardize a method of keeping a running record of stores issued to fence contractors.

Additional copies of Technical Notes are available from DSC, Federal Center Building 50, Denver, Colo., 80225

Procedure Suggested:

1. When preparing the JDR for a proposed fence job indicate under Section VII, Narrative Description or Justification - the number of corners, gates, cattleguards, and drainage crossings the fence will have. This is determined when the fence is staked in the field. (See Appendix I - form 1630-8, JDR).

2. Prepare a standard materials list of materials required for one mile of fence. A separate materials list should be made for each type of fence as shown on standard BLM drawings for fence contracts. (See Appendix II).

3. Prepare a standard materials list of materials required for constructing corners, gates, cattleguard openings and drainage crossings. (See Appendix III & IV).

4. Use Material Compilation Sheet (Appendix V) for computing an estimate of materials required for the specific job referred to in the JDR.

Instructions for use of the form are:

A. Transfer information on top third of form from the JDR.

B. For materials required for fence construction multiply the number of miles of fence times the required material shown on the materials list for the type of fence to be constructed.

C. For materials required for extra gates and corners multiply the number of gates and/or corners in excess of one per mile by the material shown on the appropriate materials list.

D. For materials required for cattleguard openings and drainage crossings multiply the number of each by the materials shown on the appropriate materials list.

E. Enter the materials required for fence construction, extra gates and corners, drainage crossings, etc. on the materials compilation sheet as shown in the examples and total each column. This gives the total estimated materials required for the fence job.

F. For purchasing fence materials for the coming fiscal year simply summarize the Materials Compilation sheets for each fence job in the AWP and the year's requirements are readily available.

5. Use Stores Issue Record Sheet (Appendix VI) for keeping a running record of Stores issues while the fence is under construction.

Instructions are as follows:

A. When the bid draft is drawn up for a contract, place one Stores Issue Record Sheet for each separate fencing job in the contract file. Data for completing the form is taken from the Materials Compilation sheet and JDR.

B. When material is issued to the contractor the person making the issue has only to go to the contract file and look on the Stores Issue Record Sheet to know what material to issue and the amount.

The material issued on a particular date is recorded on the form by the issuing officer and the amount remaining to be issued is computed and also recorded. This gives a current running account of materials issued and materials remaining to be issued.

This system is particularly helpful to administrative personnel when there is more than one job included in a contract or where the contractor makes several trips to pick up materials.

C. Benefits of this suggestion are as follows:

1. Estimates of fence material can be made accurately and quickly.

2. Materials estimates are documented in the job file.

3. Estimates are based on standard BLM drawings and specifications.

4. Post lengths, size of nails, etc. correspond to standard drawings.

5. Stores purchases of fence materials can be accurately and quickly computed.

6. Stores purchases of fence material can be easily justified.

7. Chances of overlooking small items are minimized. Materials will always be on hand when needed.

8. Stores issues of fence material can be easily and accurately made by Administrative personnel who are not normally familiar with the fence job.

9. The contract file always has a summary of materials issued and materials remaining to be issued. This is particularly important when a contract has more than one fence job included in the work. Under the present system each job file has to be reviewed to determine Stores already issued and remaining needs.

10. This system can also be used for force account jobs of cooperative construction jobs.

Appendix 1

JOB IDENTIFICATION STATE ☐☐ DISTRICT ☐☐ JOB NUMBER ☐☐☐☐

VI – LOCATION PLAT

T.___ ___ ___ R.___ ___ ___

Scale 1 inch =

Meridian

VII – NARRATIVE DESCRIPTION OR JUSTIFICATION

This fence is required for implementation of the Rock Creek AMP which was approved July 15, 1971.

1. Type "D" fence - 5 miles
2. 5 steel to 1 wood line post ratio
3. 10 standard wire gates
4. 6 standard corner panels
5. 1 H-20 cattleguard - 20 ft. wide mounted on timber base
6. 3 Type II drainage crossings
7. One stay between each line post
8. No fenceline clearing required

Prepared by Joe Smith	Title Area Manager	Date 8/21/74
Approved by John Doe	Title District Manager	Date 11/14/74

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JOB DOCUMENTATION REPORT

JOB IDENTIFICATION
1. State (2–3)
2. District (4–5)
3. Job No. (6–9)
4. Transaction Code (10)

I – GENERAL DESCRIPTION Card 1

5. Job Name (11–30)

LOCATION CODES
6. Special Project Code (31–34)
7. Planning Unit (35–36)
8. Sub-Basin (37–38) 9. County (39–41)
10. Watershed No. (42–44)
11. Allotment No. (45–47)
12. Wildlife Habitat Area (48–50)

SITE AND VEGETATIVE DESCRIPTION
13. Present SSF (51–52) 14. % Slope (53–54)
15. Exposure (55) 16. Soil Texture (56)
17. Precipitation (inches) (57–58)
18. Elevation (feet) (59–63)
19. Vegetative Subtype (64–66)

COMPOSITION *(Percent)*
20. Grasses (67–68) 21. Forbs (69–70)
22. Browse (71–72)

COVER *(Percent)*
23. Vegetative (73–74) 24. Litter (75–76)
25. Bare Ground (77–78)

II – ANNUAL WORK PLAN INPUT DATA Card 2

75. Subactivity (11–14)
76. Work Job Code (15–18)

UNITS PLANNED
77. Primary (19–24)
78. Secondary (25–29)

TIME OF AWARD
79. Fiscal Year (30–31) 80. Third (32)

TIME OF COMPLETION
81. Fiscal Year (33–34) 82. Third (35)

BLM COST 83. Method (36)
84. Material (37–41)
85. Contract (42–47)

CONTRIBUTED COST
86. Material (48–52)
87. Labor/Equipment (53–57)

MAINTENANCE
88. Responsibility (58) 89. Cycle (59–61)

III – JOB DETAILS AND BENEFITS Card 3

37. Primary Job Objective (11)

PLANT AND PEST CONTROL
39. Chemical (12) 42. Method (13)
45. Mechanical – Method (14)

ARTIFICIAL REVEGETATION
47. Pounds Seed/Acre (15–17)
48. Seedlings/Acre (18–21) 49. Method (22)
51. AUM's Livestock Forage Added (23–26)
52. Future SSF (27–28)

WATERSHED TILLAGE 54. Method (29)

FACILITIES 55. Type (30) 56. Other Misc. (31)

WATER DEVELOPMENT/CONTROL
59. Structure Type (32)
STORAGE (Ac. Ft.) 60. Flood (33–38)
61. Silt (39–44)

WILDLIFE HABITAT DEVELOPMENT/PROTECTION
62. Type (45–46) 63. Primary Species (47–49)
64. Animal Months (50–54)
65. Number Increase (55–59)
66. Pounds Fish Increase (60–64)
67. Rare/Endangered (65)

VISITOR DAYS ADDED 68. Fisherman (66–69)
69. Hunter (70–73) 70. Other (74–77)

IV – PROGRESS REPORT Card 4

COMPLETION DATA
UNITS 90. Primary (11–16)
91. Secondary (17–21)
TIME 92. Fiscal Year (22–23)
93. Third (24)
94. Contract No. (25–29) CT

CONTRIBUTION DETAIL
95. Agreement (30) 96. Participant (31)
97. Contributor's Name (32–51)

CONTRIBUTIONS
98. Deposited (52–56)
Undeposited
99. Materials (57–61)
100. Labor/Equipment (62–66)

V – DETAIL ESTIMATE OF UNITS AND COSTS

WORK DESCRIPTION AND MATERIALS	UNITS		BLM COSTS		COOPERATOR COSTS	
	EA. MILE, ETC.	COST	MATERIALS	CONTRACT	MATERIALS	LABOR
(a)	(b)	(c)	(d)	(e)	(f)	(g)
TOTALS Materials						
Labor/Equipment						

Form 1630–8 (November 1972)

MATERIALS FOR ONE MILE OF WIRE LIVESTOCK FENCES FOR USE ON ANTELOPE RANGES (For fences on BLM Drawing 08-33-9105.41-2)
Including one gate, one corner and stress panels every quarter mile (eighth mile for woven wire)

	Type "D" 4-wire (42")	Type "E" 3-wire	Type "F" 5-wire (32")	Type "G" Woven Wire (32")
1. All Steel Line Posts				
Line Posts	315-5½'	315-5½'	315-5'	315-5'
Brace & Corner Posts	19-6"x6½'	19-6"x6½'	19-6"x5½'	19-6"x5½'
Brace Posts (Horz.)	12-6"x6½ or 7'	12-6"x6½ or 7'	12-6"x6½ or 7'	12-6"x6½ or 7'
Barbed Wire (12½ ga.)	16-80 rod rolls	12-80 rod rolls	20-80 rod rolls	4-80 rod rolls
Smooth Wire (No. 9)	20 lbs.	20 lbs.	20 lbs.	25 lbs.
Woven Wire	None	None	None	16-20 rod rolls (26")
Stays, Twisted Wire	315-30"	315-30"	315-30"	315-30"
Staples (1½")	5 lbs.	5 lbs.	5 lbs.	6 lbs.
Nails (60d)	5 lbs.	5 lbs.	5 lbs.	5 lbs.
Gate Closer (lever action)	1 each	1 each	1 each	1 each
Gate Stays, Wood	4-3"x4'	4-3"x4'	4-3"x4'	4-3"x4'
2. Wood & Steel Line Posts (1 wood to 5 steel ratio)				
Line Posts, (steel)	262-5½'	262-5½'	262-5'	262-5'
Line Posts (wood)	53-4"x6'	53-4"x6'	53-4"x5'	53-4"x5'
Brace & Corner Posts	19-6"x6½'	19-6"x6½'	19-6"x5½'	19-6"x5½'
Brace Posts (Horz.)	12-6"x6½ or 7'	12-6"x6½ or 7'	12-6"x6½ or 7'	12-6"x6½ or 7'
Barbed Wire	16-80 rod rolls	12-80 rod rolls	20-80 rod rolls	20-80 rod rolls
Smooth Wire (No. 9)	20 lbs.	20 lbs.	20 lbs.	20 lbs.
Woven Wire	None	None	None	16-20 rod rolls (26")
Stays, Twisted Wire	315-30"	315-30"	315-30"	315-30"
Staples (1½")	5 lbs.	5 lbs.	6 lbs.	7 lbs.
Nails (60d)	5 lbs.	5 lbs.	5 lbs.	5 lbs.
Gate Closer (lever action)	1 each	1 each	1 each	1 each
Gate Stays, wood	4-3"x4'	4-3"x4'	4-3"x4'	4-3"x4'

MATERIALS FOR ONE MILE OF STANDARD WIRE LIVESTOCK FENCE (For fences on BLM Drawing No. 08-33-9105.41-1)

Including one gate, one corner and stress panels every quarter mile (eighth mile for woven wire)

	Type "A" 4-wire (48")	Type "B" 3-wire (42")	Type "C" 48" Woven Wire	Type "C" 42" Woven Wire
1. All Steel Line Posts				
Line Posts (steel)	315-6'	315-5½'	315-6'	315-5½'
Brace & Corner Posts	19-6"x7'	19-6"x6½'	27-6"x7'	27-6"x6½'
Brace Posts (Horz.)	12-6"x7'	12-6"x7'	16-6"x7'	16-6"x7'
Barbed Wire (12½ ga.)	16-80 rod rolls	12-80 rod rolls	8-80 rod rolls	8-80 rod rolls
Smooth Wire (No. 9)	20 lbs.	20 lbs.	25 lbs.	25 lbs.
Woven Wire	None	None	16-20 rod rolls (32")	16-20 rod rolls (26")
Stays, Wire	315-36"	315-30"	315-30"	315-30"
Staples (1½")	5 lbs.	5 lbs.	6 lbs.	6 lbs.
Nails (60d)	5 lbs.	5 lbs.	6 lbs.	6 lbs.
Gate Closer (lever action)	1 each	1 each	1 each	1 each
Gate Stays, Wood	4-3"x4'	4-3"x4'	4-3"x4'	4-3"x4'
2. Wood & Steel Line Posts (1 wood to 5 steel ratio)				
Line Posts (steel)	262-6'	262-5½'	262-6'	262-6'
Line Posts (wood)	53-4"x6½'	53-4"x6'	53-4"x6½'	53-4"x6'
Brace & Corner Posts	19-6"x7'	19-6"x6½'	27-6"x7'	27-6"x6½'
Brace Posts (Horz.)	12-6"x7'	12-6"x6½ or 7'	16-6"x7'	16-6"x7'
Barbed Wire (12½ ga.)	16-80 rod rolls	12-80 rod rolls	8-80 rod rolls	8-80 rod rolls
Smooth Wire (No. 9)	20 lbs.	20 lbs.	125 lbs.	125 lbs.
Woven Wire	None	None	16-20 rod rolls (32")	16-20 rod rolls (26")
Stays, Wire	315-36"	315-30"	315-30"	315-30"
Staples (1½")	5 lbs.	5 lbs.	6 lbs.	6 lbs.
Nails (60d)	5 lbs.	5 lbs.	6 lbs.	6 lbs.
Gate Closer (lever action)	1 each	1 each	1 each	1 each
Gate Stays, Wood	4-3"x4'	4-3"x4'	4-3"x4'	4-3"x4'

Appendix III

MATERIALS FOR CONSTRUCTION OF CATTLEGUARD OPENINGS AND EXTRA GATES AND CORNER PANELS

BLM Drawings 08-33-9105.41-1 & 2

	Type "A" & "C" Fences	Type "B", "D" & "E" Fences	Type "F" & "G" Fences
1. Standard Wire Gate Panel			
Brace Posts	6-6"x7'	6-6"x6½'	6-6"x5½'
Brace Posts (Horz.)	4-6"x7'*	4-6"x7'	4-6"x6½ or 7'
Gate Closer (lever action)	1 each	1 each	1 each
Gate Stays, wood	4-3"x4'	4-3"x4'	4-3"x4'
Staples (1½")	1 lb.	1 lb.	1 lb.
Nails (60d)	1 lb.	1 lb.	1 lb.
Smooth Wire (No. 9)	5 lbs.	5 lbs.	5 lbs.
2. Standard Corner Panel			
Brace Posts	5-6"x7'	5-6"x6½'	5-6"x5½'
Brace Posts (Horz.)	4-6"x7'	4-6"x7'	4-6"x6½ or 7'
Staples (1½")	1 lb.	1 lb.	1 lb.
Nails (60d)	1 lb.	1 lb.	1 lb.
Smooth Wire (No. 9)	5 lbs.	5 lbs.	5 lbs.
3. Standard Cattleguard Opening			
Brace Posts	8-6"x7'	8-6"x6½'	8-6"x5½'
Brace Posts (Horz.)	5-6"x7'	5-6"x7'	5-6"x6½ or 7'
Staples (1½")	1 lb.	1 lb.	1 lb.
Nails (60d)	1 lb.	1 lb.	1 lb.
Smooth Wire (No. 9)	5 lbs.	5 lbs.	5 lbs.

* 6"x6½' for Type C-42

MATERIALS FOR CONSTRUCTION OF STANDARD FENCE SPANS ACROSS DRAINAGES

BLM Drawing No. 08-33-9105.41-3

	Type "A" & "C" Fences	Type "B", "D" & "E" Fences	Type "F" & "G" Fences
1. Type I Drainage Crossing			
End Posts	2-6"x7'	2-6"x6½'	2-6"x5½'
Line Posts*	Variable-4"x6½'	Variable-4"x6'	Variable-4"x5'
2. Type II Drainage Crossing			
Brace Posts	10-6"x7'	10-6"x6½'	10-6"x5½'
Brace Posts (Horz.)	4-6"x7'	4-6"x7'	4-6"x6½ or 7'
Line Posts*	Variable-4"x6½'	Variable-4"x6'	Variable-4"x5'
Poles**	8-3" min. x 20'	8-3" min. x 20'	6-3" min. x 20'
Staples (1½")	1 lb.	1 lb.	1 lb.
Nails (60d)	1 lb.	1 lb.	1 lb.
Nails (40d)	1 lb.	1 lb.	1 lb.
Smooth Wire	5 lbs.	5 lbs.	5 lbs.

* - One post each rod - varies with width of drainage

** - 2 x 4 lumber may be substituted

FENCE SPANS ACROSS DRAINAGES (Continued)

	Type "A" & "B" Fences	Type "B", "D" & "E" Fences	Type "F" & "G" Fences
3. Type III Drainage Crossing			
Brace Posts	6-6"x7'	6-6"x6½'	6-6"x5½'
Brace Posts (Horz.)	4-6"x7'	4-6"x7'	4-6"x6½ or 7'
Pole Support Post	2-6"x6½ or 7'	2-6"x6½'	2-6"x5½'
Poles	6-3" min. x 20'	6-3" min. x 20'	6-3" min. x 20'
Staples (1½")	1 lb.	1 lb.	1 lb.
Nails (40d)	1 lb.	1 lb.	1 lb.
Nails (60d)	1 lb.	1 lb.	1 lb.
Smooth Wire***	Variable-lb.	Variable-lb.	Variable-lb.
Bearing Pole	4-8"x36"	4-8"x36"	4-8"x36"
Wire Rope (1/2")***	Variable-ft.	Variable-ft.	Variable-ft.
Wire Rope (3/8")***	Variable-ft.	Variable-ft.	Variable-ft.
Turnbuckle	2-each	2-each	2-each
Wire Rope Clamps (1/2")***	Variable-each	Variable-each	Variable-each
Wire Rope Clamps (3/8")***	Variable-each	Variable-each	Variable-each
Log Floats***	Variable-4"x8' max.	Variable-4"x8' max.	Variable-4"x8' max.

4. Type IV Drainage Crossing

Same as Type III except as noted below:

Deduct Log Floats

Add 2"x4" Lumber***	Variable-ft.
Add Bolts	Variable-3/8" x 4 1/4"

*** - Variable with width of crossing

Materials Compilation Sheet -- Fence Construction

Job Name Rock Creek Fence Job Number 6502 Fence Type "D" Line Post Ratio 5 steel to 1 wood

Miles Five Extra Gates Five Extra Corners One Cattleguard Openings One

Drainage Crossings: Type I ______ Type II Three Type III ______ Type IV ______

	Posts, Steel, 5½ ft.	Posts, Wood, 4 in. x 6 ft.	Posts, Wood, 6 in. x 6½ ft.	Posts, Wood, 6 in. x 7 ft.	Wire, Barbed	Wire, Smooth, No. 9	Wire, Woven, in.	Stays, Wire, 30 in.	Staples, 1½"	Nails, 40d	Nails, 60d	Gate Closer	Stays, Gate, 3" x 4'	Poles, 3" min. x 20'	Bearing Pole, 8" x 3'	Wire Rope, 1/2"	Wire Rope, 3/8"	Wire Rope Clamps, 1/2"	Wire Rope Clamps, 3/8"	Turnbuckle	Log Floats, 4" x 8' max.	Lumber, 2" x 4"	Bolts, 3/8" x 4 1/4
Fence Construction	1310	265	95	60	80	100		1515	25	25		5	20										
Extra Gates			30	20		25			5	5		5	20										
Extra Corners			5	4		5			1	1													
Cattleguard Openings			8	5		5			1	1													
Drainage Crossing I																							
Drainage Crossing II		10	30	12		15			3	3	3			24									
Drainage Crossing III																							
Drainage Crossing IV																							
Total Material	1310	275	168	101	80	150		1515	35	35	3	10	40	24									

Appendix VI

Job Name: Rock Creek Fence

Job No.: 8100/6448/6502

Itemized List of Materials	Estimated No. Required	No. Issued Date 6/20/75	Remaining to be Issued	No. Issued Date 6/25/75	Remaining to be Issued	No. Issued Date 7/ 5/75	Remaining to be Issued	No. Issued Date	Remaining to be Issued
Steel Posts 5½'	1310	500	810	500	310	310	0		
Wood Posts 4" x 6'	275	100	175	100	75	75	0		
Wood Posts 6" x 6½'	168	50	118	50	68	68	0		
Wood Posts 6" x 7'	101	50	51	51	0		0		
Barbed Wire	80	20	60	20	40	40	0		
Smooth #9 Wire	150	150	0		0		0		
Stays 30"	1575		1575	1575	0		0		
Staples 1½"	35	35	0		0		0		
Nails 40d	35	35	0		0		0		
Nails 60d	3	3	0		0		0		
Gate Closer	10		10	10	0		0		
Gate Stays 3" x 4'	40		40	40	0		0		
Poles 3" min. x 20'	24		24	24	0		0		

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